

CLAIMS

1. A process for continuously producing an elastomeric composition, comprising the steps of:
 - 5 - metering and feeding into at least one extruder (110) at least one elastomer and at least one filler;
 - mixing and dispersing said filler into said elastomer by means of said extruder (110), and
 - 10 - passing the resulting elastomeric composition through at least one static mixer (210).
2. Process according to claim 1, further comprising the step of discharging said resulting elastomeric composition from said extruder (110), said step of
15 discharging being carried out before said step of passing.
3. Process according to claim 2, further comprising the step of cooling said resulting elastomeric composition discharged from said extruder (110).
- 20 4. Process according to claim 3, wherein said resulting elastomeric composition is cooled down at a temperature not higher than 110 °C.
5. Process according to claim 4, wherein said temperature ranges from 20 °C to 90 °C.
- 25 6. Process according to claim 1, further comprising the steps of metering and feeding into said extruder (110) at least one minor ingredient.
7. Process according to claim 6, wherein said minor ingredient does not include a temperature sensitive
30 minor ingredient.
8. Process according to claim 6, further comprising the steps of mixing and dispersing said at least one minor ingredient into said elastomer by means of said extruder (110).
- 35 9. Process according to claim 2, further comprising the

step of adding at least one minor ingredient to said resulting elastomeric composition discharged from said extruder (110).

10. Process according to claim 6 or 9, wherein said at least one minor ingredient includes at least one temperature sensitive minor ingredient.
11. Process according to claim 6 or 9, wherein said at least one minor ingredient is in the form of a subdivided product.
12. Process according to claim 6 or 9, wherein said at least one minor ingredient is in the form of a powder.
13. Process according to claim 6 or 9, wherein said at least one minor ingredient is in the form of a masterbatch.
14. Process according to claim 13, wherein said masterbatch comprises said minor ingredient and said resulting elastomeric composition discharged from said extruder (110).
15. Process according to claim 13 or 14, wherein said masterbatch is obtained in the form of a subdivided product.
16. Process according to claim 2, further comprising the step of obtaining a subdivided product from said resulting elastomeric composition discharged from said extruder (110).
17. Process according to claim 16, wherein said step of obtaining a subdivided product is carried out at the discharge opening of said extruder (110).
18. Process according to claim 16 and 3, wherein said step of obtaining a subdivided product from said resulting elastomeric composition is carried out after said step of cooling.
19. Process according to claim 16, further comprising the steps of:

- accumulating an amount of said subdivided product obtained from the resulting elastomeric composition discharged from said extruder (110), and
- 5 - stirring said accumulated amount of subdivided product.
- 20. Process according to claim 15, further comprising the steps of:
 - accumulating an amount of the subdivided product
 - 10 obtained from said masterbatch, and
 - stirring said accumulated amount.
- 21. Process according to claims 9 and 19, wherein said step of adding is carried out before said steps of accumulating and stirring.
- 15 22. Process according to claims 9 and 19, wherein said step of adding is carried out after said steps of accumulating and stirring.
- 23. Process according to Claim 1, further comprising a discharging step of said elastomeric composition from
- 20 said static mixer (210).
- 24. Process according to Claim 23, wherein said discharging step is carried out continuously.
- 25. Process according to Claim 23, wherein said discharging step is carried out batchwise.
- 25 26. Process according to Claim 6 or 9, wherein said minor ingredient is selected from: crosslinking agents, crosslinking accelerators, resins, crosslinking
- 30 activators, crosslinking retardants, adhesion promoters, protective agents, coupling agents, condensation catalysts.
- 27. An apparatus (200, 300, 400, 500, 600, 700, 800, 900, 950) for continuously producing an elastomeric composition, comprising:
 - at least one twin-screw extruder (110) comprising
 - 35 a housing and two screws rotatably mounted in

said housing, said housing including at least one feed opening (111) and a discharge opening;

- at least one metering device (112) to meter and feed into said extruder (110) at least one elastomer and at least one filler, and
- at least one static mixer (210) for passing through the resulting elastomeric composition discharged from said discharge opening of said extruder (110).

28. Apparatus according to Claim 27, wherein said static mixer (210) is positioned at said discharge opening of said extruder (110).

29. Apparatus according to Claim 27, wherein said static mixer (210) is positioned downstream of said extruder (110).

30. Apparatus according to Claim 27, further comprising at least one further metering device (112) to meter and feed into said extruder (110) at least one minor ingredient.

31. Apparatus according to Claim 29, further comprising at least one further metering device to meter and add at least one minor ingredient to said resulting elastomeric composition (E) discharged from said discharge opening.

32. Apparatus according to Claim 30 or 31, wherein said minor ingredient comprises at least one temperature sensitive minor ingredient.

33. Apparatus according to Claim 29, further comprising at least one cooling device upstream of said static mixer (210).

34. Apparatus according to Claim 29, further comprising at least one device (410, 510) for obtaining a subdivided product (G) from said resulting elastomeric composition (E) discharged from said discharge opening.

35. Apparatus according to Claim 34, wherein said device (510) for obtaining a subdivided product (G) is positioned at said discharge opening of said extruder (110).
- 5 36. Apparatus according to Claim 35, wherein said device (510) for obtaining a subdivided product (G) is a perforated die plate equipped with cutting means.
37. Apparatus according to Claim 34, wherein said device (410) for obtaining a subdivided product (G) is a granulator or an open mill.
- 10 38. Apparatus according to Claim 34, further comprising at least one stirring device (710) for mixing the accumulated subdivided product (G) obtained from said resulting elastomeric composition (E) discharged from said extruder (110).
- 15 39. Apparatus according to Claim 38, wherein said stirring device (710) is positioned upstream of said static mixer (210).
40. Apparatus according to Claim 27 or 31, wherein said metering device (112) is a gravimetric feeder.
- 20 41. Apparatus according to Claim 38, wherein said stirring device (710) is a rotating drum.
42. Apparatus according to Claim 28, further comprising a feeding and pumping device (211) positioned upstream of said static mixer (210).
- 25 43. Apparatus according to Claim 42, wherein said feeding and pumping device (211) is a gear-pump.
44. Apparatus according to Claim 29, further comprising a feeding and pumping device (310, 320) positioned at a feed opening of said static mixer (210).
- 30 45. Apparatus according to Claim 44, wherein said feeding and pumping device (310, 320) is selected from the group comprising: a gear pump, a single-screw extruder, a reciprocating screw, and combinations thereof.
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46. Apparatus according to Claim 27, further comprising at least one filtering body (212) positioned upstream of said discharge opening of said extruder (110).